Notes 9/24 - Solving Equations

- When you solve an equation, you're working backwards and undoing.

→ A S M D E P

Ex: $7x + 5 = 14$
$\quad -5 \quad -5$

$\frac{7x}{7} = \frac{9}{7}$ $\quad \boxed{x = \frac{9}{7}}$

- Sometimes you have to simplify a side first

Ex: $5a + 3 - 2a = a + 7$

$3a + 3 = a + 7$
$-a \quad\quad -a$

$2a + 3 = 7$
$-3 \quad -3$

$\frac{2a}{2} = \frac{4}{2}$ $\quad \boxed{a = 2}$

Solve for a variable

⇒ More rearranging the equation to isolate a given variable

Ex: Solve $S = \pi r l + \pi r^2$ for l
$\quad -\pi r^2 \quad\quad -\pi r^2$

$\frac{S - \pi r^2}{\pi r} = \frac{\pi r l}{\pi r}$ $\quad \boxed{l = \frac{S - \pi r^2}{\pi r}}$

Ex 2: $3 \cdot V = \frac{1}{3}\pi r^2 h$, Solve for r.

$$\frac{3V}{\pi h} = \frac{\pi r^2 h}{\pi h}$$

$$\sqrt{\frac{3V}{\pi h}} = \sqrt{r^2} \qquad \boxed{r = \sqrt{\frac{3V}{\pi h}}}$$

Ex 3: $D = \frac{M}{V}$ Solve for V

* Whenever the variable you're solving for is on the bottom, the first thing you need to do is multiply by that variable on both sides

$$V \cdot D = \frac{M}{V} \cdot V$$

$$\frac{V \cdot D}{D} = \frac{M}{D} \qquad \boxed{V = \frac{M}{D}}$$